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Two new Polypodia from New Zealand

By Benjamin D. Gilbert

When the Transit-of-Venus expedition was sent to New Zealand, in 1874, the party landed at Dunedin, on the southeast coast of the middle island. But the fogs of that part of the island obscured the sky too much to suit an astronomer and after investigation it was decided to go inland about 100 miles to a place called Queenstown, on or near Waikatipu Lake, where the land was much higher and fogs did not exist.

Dr. C. H. F. Peters, who was the astronomer-in-chief, had promised me before leaving home that he would procure for me such ferns as he might be able to find. While his temporary observatory was being built he took many walks about the adjacent country; and during these rambles he picked up a considerable number of species that were really desirable. Among the *Lomarias* that abound there he secured *L. vulcanica*, *L. alpina*, *L. fluviatilis*, *L. Fraseri* and, of course, *L. procera*, and one of its most interesting varieties, *L. imbricata*. He brought two fine species of the beautiful *Todea* as well as endemic species of *Cyathea*, *Hymenophyllum*, *Trichomanes*, *Gleichenia*, *Dryopteris* and *Polypodium*. In this last genus there were specimens of a fern which Dr. Hooker does not give in his Flora of New Zealand and which has seldom been found in the southern hemisphere, viz., *Polypodium vulgare*. There is enough peculiarity about it to constitute a distinct variety, but if all the forms from different parts of the world that have been placed under this species really belong there, then this form also must be included.

There was also another Polypod allied to this, but so distinct that, after having it under occasional observation for 25 years, I have decided to describe it as an entirely new species. The description is as follows :

Polypodium viride sp. nov.

Rhizome the size of small whip cord, the growing end densely clothed with bright brown narrow-lanceolate scales, their filiform apices often twisted: stipules slender, close together but hardly clustered, ¾ to 1¼ in. long, greenish or greenish-brown, naked, slightly margined at base: mature fronds 1¾ to 2½ in. long, ¾ to 1 in. wide, pinnate with a yellowish pellucid callosity in the sinus between pinnae: color bright green on upper side, paler beneath, rachis green with a few minute scattered scales as in *P. Plumula:* largest pinnae ½ in. long, strictly alternate, 8 to 9 pairs with a similar terminal pinna that is slightly pinnatifid below lower pinnae not reduced, each pinna expanded at base on both sides and adherent: veins free, *only once forked* semi-pellucid, clavate within the margin: sori in two rows, 4 to 6 on each side of costa and extending on to terminal pinna, chiefly on upper half of frond, large, borne at extremity of anterior branch of veins midway between costa and margin, but filling the entire width of pinna, papillose on upper side of frond: texture firm, subcoriaceous.

This beautiful little fern is intermediate between *P. pellucidum* and *P. vulgare.* It differs from its two allies in its smaller size, in having the veins only once forked like those of a *Cyathea,* in the fine black wavy costae, in the slender green stipes and rachis and in the metallic green color of its fronds. Although it is 25 years since it was gathered, it retains its greenness as brilliant as ever.

Polypodium vulgare auritum var. nov.

General features and venation same as in species: texture very thick and opaque, but veins raised enough to show venation: cut down close to rachis and lowest pair of pinnae fully separated: texture so thick that surface is corrugated and pitted on upper side, especially the ends of veinlets: edges of pinnae wavy: stipites very thick and stout but stramineous as in typical *P. vulgare,* lowest pair of pinnae generally auricled at base on lower side only, the auricle being sometimes one-third the length of pinna. These auricles are not always present even on fronds from the same rootstock, but they seem to be the rule and give a definite character to the variety. Our eastern *P. vulgare* stands midway between this and the thin sharp pointed form that grows in Japan and is known as var. *Japonicum.*